

**IN THE CLAIMS:**

The following is a complete listing of claims in this application.

Claims 1-12 (canceled).

13. (currently amended) A magnetic sensor for determining a linear location of an object moving along an axis of displacement, the sensor including:

an open magnetic circuit including means for creating a magnetic flux which is mounted and displaceable by the moving object,

at least one pole piece associated with the means for creating a magnetic flux, and which is orientated at least perpendicularly to a surface of the pole piece with at least one gap being delimited by the surface of the pole piece and the means for creating the magnetic flux, a magnetic leakage flux emerging from the pole piece having a strength which varies at the surface of the pole piece along the axis of displacement,

at least one first measuring cell fixedly mounted in the magnetic circuit which is capable of measuring the value of the magnetic flux relative to the axis of displacement, the measuring cell being mounted near an extreme point of displacement to determine thereby magnetic flux delivered by the means for creating a magnetic flux minus the magnetic leakage flux, and

means for processing the output signal delivered by the measuring cell in order to determine the linear location of the moving object along the axis of displacement,

wherein the open magnetic circuit includes a second pole piece positioned facing the first pole piece, and delimiting a gap therebetween.

14. (previously presented) The magnetic sensor according

to claim 13, additionally comprising a second measuring cell fixedly mounted in the magnetic circuit near an opposite extreme point of displacement so as to measure the magnetic flux delivered by the means for creating the flux minus the magnetic leakage flux.

15. (previously presented) The magnetic sensor according to claim 13, wherein the means for creating a magnetic flux is mounted to be displaceable in translation.

16. (previously presented) The magnetic sensor according to claim 14, wherein the processing means for determining the location of the moving object calculates the difference between the output signals delivered by the first and the second measuring cells.

17. (previously presented) The magnetic sensor according to claim 14, wherein the processing means for determining the location of the moving object calculates the difference between the output signals delivered by the first and the second measuring cells, divided by the sum of the output signals delivered by the first and second measuring cells.

18. (previously presented) The magnetic sensor according to claim 14, wherein the processing means include means for analyzing each output signal in an independent or combined manner in order to determine operating state of each said measuring cell.

19. (previously presented) The magnetic sensor according to claim 13, wherein the means for creating a magnetic flux comprises a radially magnetized annular component having an axis which is parallel to an axis of translational displacement.

Claims 20-21 (canceled).

22. (currently amended) The magnetic sensor according to claim ~~21~~ 13, wherein the second pole piece is provided with

means for creating the magnetic flux.

23. (currently amended) The magnetic sensor according to claim ~~21~~ 13, wherein the second pole piece is tubular and comprises a radially magnetized annular component.

24. (currently amended) The magnetic sensor according to claim ~~21~~ 13, wherein either the first or second pole piece has a planar profile adapted for improving linearity of the output signal delivered by the measuring cells.

25. (previously presented) The magnetic sensor according to claim 13, wherein the gap is fixed in distance along the length of travel of the object.

26. (new) A magnetic sensor for determining a linear location of an object moving along an axis of displacement, the sensor including:

- an open magnetic circuit including means for creating a magnetic flux which is mounted and displaceable by the moving object,

- at least one pole piece associated with the means for creating a magnetic flux, and which is orientated at least perpendicularly to a surface of the pole piece with at least one gap being delimited by the surface of the pole piece and the means for creating the magnetic flux, a magnetic leakage flux emerging from the pole piece having a strength which varies at the surface of the pole piece along the axis of displacement,

- at least one first measuring cell fixedly mounted in the magnetic circuit which is capable of measuring the value of the magnetic flux relative to the axis of displacement, the measuring cell being mounted near an extreme point of displacement to determine thereby magnetic flux delivered by the means for creating a magnetic flux minus the magnetic leakage flux, and

means for processing the output signal delivered by the measuring cell in order to determine the linear location of the moving object along the axis of displacement.

wherein the means for creating a magnetic flux comprises a series of four magnets having magnetization directions which are shifted by 90°.